Application No. 09/715,775
Docket No. 2000U034.US
Reply to Office Action Dated October 17, 2003

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

23. (Currently Amended) A process for polymerizing olefin(s) comprising the steps of:

(a) preparing a catalyst composition by the steps of combining the following components:

(i) first combining a catalyst compound and supported alumoxane;

(ii) followed by combining an ionizing activator to form the catalyst composition; wherein the ionizing activator is a compound represented by the formula:

$(L'\text{-}H)_d^+ (A^{d-})$

wherein L' is a neutral Lewis base;
H is hydrogen;
$(L'\text{-}H)^+$ is a Bronsted acid
A^{d-} is a non-coordinating anion having the charge d-; and
d is an integer from 1 to 3; or is a tri-substituted boron, tellurium, ~~aluminum~~, gallium, or indium compound, or mixtures thereof; and

(b) contacting the catalyst composition with one or more olefins under polymerization conditions to form a polyolefin.

24. (Previously Amended) The process of Claim 23, wherein the components of the catalyst components in (ii) are contacted for at least 1 min.

25. (Previously Amended) The process of Claim 23, wherein the components of the catalyst components in (ii) are contacted for between 1 min. to one day.

26. (Previously Amended) The process of Claim 23, wherein the components of the catalyst components in (ii) are contacted for between one hour and one day.

27. (Previously added) The process of Claim 23, wherein the components in step (i) are combined in a diluent having a flash point of greater than 200°F (93°C).

28. (Previously added) The process of Claim 23, wherein the components in step (i) are combined in a hydrocarbon diluent.

29. (Previously added) The process of Claim 23, wherein the component in step (ii) is suspended in a diluent having a flash point of greater than 200°F (93°C) prior to forming the catalyst composition.

30. (Previously added) The process of Claim 23, wherein the component in step (ii) is suspended in a hydrocarbon diluent prior to forming the catalyst composition.

31. (Previously added) The process of Claim 23, further comprising the step of combining a cycloalkadiene compound.

32. (Previously added) The process of Claim 31, wherein the cycloalkadiene compound is selected from cyclopentadiene, methylcyclopentadiene, ethylcyclopentadiene, t-butylcyclopentadiene, hexylcyclopentadiene, octylcyclopentadiene, 1,2-dimethylcyclopentadiene, 1,3-dimethylcyclopentadiene, 1,2,4-trimethylcyclopentadiene, 1,2,3,4-tetramethylcyclopentadiene, pentamethylcyclopentadiene, indene, 4-methyl-1-indene, 4,7-dimethylindene, 4,5,6,7-tetrahydroindene, fluorene, methylfluorene, cycloheptatriene,

methylcycloheptatriene, cyclooctatraene, methylcyclooctatraene, fulvene and dimethylfulvene.

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33. (Previously added) The process of Claim 23, wherein the catalyst compound is a metallocene compound.

34. (Previously added) The process of Claim 23, wherein the catalyst compound is a transition metal catalyst based on bidentate ligands containing pyridine or quinoline moieties.

35. (Previously Cancelled)

36. (Previously Cancelled)

37. (Currently amended) The process of Claim 23, wherein the mole ratio of the ionizing activator to the catalyst compound transition metal atom is from 0.01 to ~~1.0~~ 2.0.

38. (Previously added) The process of Claim 27 or 29, wherein the diluent is mineral oil.

39. (Previously added) The process of Claim 23, wherein the process is a gas phase process.

40. (Currently Amended) A process for polymerizing olefin(s) comprising the steps of:

(a) preparing a catalyst composition by combining a catalyst compound, supported alumoxane, and an ionizing activator to form the catalyst composition, wherein the components are contacted for at least 1 min prior

to contacting with olefin(s) for polymerization; wherein the ionizing activator is a compound represented by the formula:

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$$(L'\text{-}H)_d^+ (A^{d-})$$

wherein L' is a neutral Lewis base;
H is hydrogen;
$(L'\text{-}H)^+$ is a Bronsted acid
A^{d-} is a non-coordinating anion having the charge d-; and
d is an integer from 1 to 3; or is a tri-substituted boron, tellurium, ~~aluminum~~, gallium, or indium compound, or mixtures thereof; and

(b) contacting the catalyst composition with one or more olefins under polymerization conditions to form a polyolefin

41. (Previously added) The process of Claim 40, wherein the components of the catalyst composition are contacted for between 1 min to one day.

42. (Previously added) The process of Claim 40, wherein the components of the catalyst composition are contacted for between one hour and one day.

43. (Previously added) The process of Claim 40, wherein the components in step (a) are combined in a diluent having a flash point of greater than 200°F (93°C).

44. (Previously added) The process of Claim 40, wherein the components in step (a) are combined in a hydrocarbon diluent.

45. (Previously added) The process of Claim 40, further comprising the step of combining a cycloalkadiene compound.

46. (Previously added) The process of Claim 45, wherein the cycloalkadiene compound is selected from cyclopentadiene, methylcyclopentadiene, ethylcyclopentadiene, t-butylcyclopentadiene, hexylcyclopentadiene, octylcyclopentadiene, 1,2-dimethylcyclopentadiene, 1,3-dimethylcyclopentadiene, 1,2,4-trimethylcyclopentadiene, 1,2,3,4-tetramethylcyclopentadiene, pentamethylcyclopentadiene, indene, 4-methyl-1-indene, 4,7-dimethylindene, 4,5,6,7-tetrahydroindene, fluorene, methylfluorene, cycloheptatriene, methylcycloheptatriene, cyclooctatraene, methylcyclooctatraene, fulvene and dimethylfulvene.

47. (Previously added) The process of Claim 40, wherein the catalyst compound is a metallocene compound.

48. (Previously added) The process of Claim 40, wherein the catalyst compound is a transition metal catalyst based on bidentate ligands containing pyridine or quinoline moieties.

49. (Previously Cancelled)

50. (Previously Cancelled)

51. (Currently amended) The process of Claim 40, wherein the mole ratio of the ionizing activator to the catalyst compound transition metal atom is from 0.01 to ~~1.0~~ 2.0.

52. (Previously added) The process of Claim 43, wherein the diluent is mineral oil.

53. (Previously added) The process of Claim 40, wherein the process is a gas phase process.

54. The process of Claim 23, wherein the ionizing activator is selected from the group consisting of tris(pentafluorophenyl)borane, dimethylanilinium tetra(pentafluorophenyl)borate, dimethylanilinium tetra(pentafluorophenyl)aluminate, dimethylanilinium tetrafluoroaluminate, tri(n-butyl)ammonium) tetra(pentafluorophenyl)borate, tri(n-butyl)ammonium) tetra(pentafluorophenyl)-aluminate, tri(n-butyl)ammonium) tetrafluoroaluminate, the sodium, potassium, lithium, tropyliun and the triphenylcarbenium salts of these compounds, and combinations thereof.

55. The process of Claim 40, wherein the ionizing activator is selected from the group consisting of tris(pentafluorophenyl)borane, dimethylanilinium tetra(pentafluorophenyl)borate, dimethylanilinium tetra(pentafluorophenyl)aluminate, dimethylanilinium tetrafluoroaluminate, tri(n-butyl)ammonium) tetra(pentafluorophenyl)borate, tri(n-butyl)ammonium) tetra(pentafluorophenyl)-aluminate, tri(n-butyl)ammonium) tetrafluoroaluminate, the sodium, potassium, lithium, tropyliun and the triphenylcarbenium salts of these compounds, and combinations thereof.